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TECHNICAL NOTE

Indications of sustained delay of colorectal cancer diagnoses in Germany during the first 2 years of the COVID-19 pandemic

Dear Editor:

The COVID-19 pandemic has led to delays in cancer diagnoses and treatments in many countries for various reasons,[1] such as lockdown measures and contact restrictions, aggravated shortages of capacities of health care systems, and patients' reluctance to seek contacts with the health care system for non-COVID-related conditions. Such delay in diagnosis and treatment is of major concern as it is expected to substantially increase cancer-related deaths.[2] This particularly applies to cancers for which effective measures of early detection are available, such as colorectal cancer (CRC). Because sufficiently complete cancer registry data are often available with substantial delay, previous attempts to quantify under-diagnosis and delayed diagnoses during the COVID-19 pandemic were based on data from 2020 only, the initial year of the pandemic. With monitoring CRC diagnoses over prolonged periods of time during the COVID-19 pandemic, it is of particular interest if, to what extent and at what point of time diagnostic delays of CRC were overcome which will be crucial for valid estimates of the long-term adverse consequences of the delays as well as possible lessons of how to better prevent such delays should comparable circumstances come up again in the future.

Germany is one of few countries in which screening for CRC by either colonoscopy or fecal immunochemical test is offered as primary screening exams. We previously demonstrated substantial underdiagnoses of CRC in Saarland, a state located in South West Germany, in 2020, the first year of the pandemic.[3] Here, we use updated cancer registry data, covering the full years 2020 and 2021, that is, the first 2 years of the pandemic, to analyze the extent and persistence of diagnostic delays in 3-month time intervals during the course of the pandemic.

Our analyses are based on data from the population-based Saarland cancer registry. Cancer registration is done in a decentralized manner in each of the Federal states of Germany. The Saarland cancer registry is the registry with the longest time series of highly complete and accurate data in Germany, and it is well known for its completeness, accuracy, and timeliness in providing state-wide data.[4] Overall CRC incidence in Saarland is comparable to CRC incidence on the national level.

From the registry data, we extracted the numbers of newly diagnosed CRC cases (ICD-10 codes C18-C20) in 3-month intervals in 2020 and 2021, the first and the second calendar year of the COVID-19 pandemic and in the corresponding 3-month intervals in the four preceding calendar years 2016–2019. We compared the number of diagnoses in each 3-month interval with the number that would have been expected if the rate of diagnoses had been the same as in the preceding years 2016–2019. The latter was derived from sex-and age-specific incidence rates in 2016–2019 and the sex-and age-specific size of the Saarland population in 2020 and 2021. In analogy with previous studies including our previous analysis for the year 2020,[3] we calculated the ratio of observed and expected diagnoses and reported this ratio, which is known as the standardized incidence ratio (SIR), with 95% confidence intervals (CIs). In addition to the SIRs for each individual quarter, we also derived "cumulative SIRs" based on cumulative numbers of observed and expected cases since the first quarter of 2020.

As shown in Table 1, the observed number of CRC cases was substantially lower (by 8%–33%) than the number that would have been expected from the 2016–2019 incidence rates in all quarters of 2020 and the first two quarters of 2021. Overall, there were 249 less diagnoses than expected in this 1.5-year time window, more than the number of observed or expected cases in any of the assessed quarters, and accounting for 18% of CRC diagnoses that would have been expected (cumulative SIR: 0.82, 95% CI: 0.78–0.87) based on incidence rates in 2016–2019. The largest discrepancy between observed and expected numbers of cases was seen in the second quarter of 2020 (SIR: 0.67, 33% less cases than expected). In the last two quarters of 2021, observed case numbers seemed to be back to expected values (SIR: 1.01 [95% CI: 0.89–1.15] and 1.02 [95% CI: 0.88–1.16], respectively).

Our analyses thereby demonstrate a sustained "shortfall" of CRC diagnoses in Saarland/Germany during the COVID-19 pandemic up to and including the second quarter of 2021. Even though case numbers seemed to return to expected values in the third and fourth quarters of 2021, substantial diagnostic delay has to be assumed for newly occurring cases even in those quarters, as the total numbers of diagnoses in these quarters are likely to include substantial number of delayed diagnoses from earlier time windows. Taken together, these patterns suggest sustained delay of CRC diagnoses until at least the middle of 2021, but likely even beyond that date.

Our results are in agreement, expanding and updating earlier reports on less than expected CRC diagnoses and treatments of CRC during the early phase of the pandemic in Germany.[3,5,6] For example, Reinacher-Schick et al. reported 10% less CRC surgery in 2020 compared to 2019, according to routine data collected from the statutory

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TABLE 1 Observed CRC cases in 2020 and 2021, expected cases based on incidence data in 2016–2019, and standardized incidence ratio according to standard analysis.

		Numbers of cases					
Year	Quarter	Observed	Expected	Difference	Cumulative difference	Quarter-specific SIR (95% CI)	Cumulative SIR (95% CI)[a]
2020	Q1	211	237	−26	−26	0.89 (0.78–1.02)	0.89 (0.78–1.02)
	Q2	166	247	−81	−107	0.67 (0.57–0.78)	0.78 (0.70–0.86)
	Q3	204	235	−31	−138	0.87 (0.75–0.99)	0.81 (0.74–0.87)
	Q4	196	212	−16	−154	0.92 (0.80–1.06)	0.83 (078–0.89)
2021	Q1	194	237	−43	−197	0.82 (0.71–0.94)	0.83 (0.78–0.88)
	Q2	196	248	−52	−249	0.79 (0.68–0.91)	0.82 (0.78–0.87)
	Q3	239	236	3	−246	1.01 (0.89–1.15)	0.85 (0.81–0.90)
	Q4	216	213	3	−243	1.02 (0.88–1.16)	0.87 (0.83–0.91)

Abbreviations: CI, confidence interval; CRC, colorectal cancer; SIR, standardized incidence ratio.
[a]Based on cumulative numbers of observed and expected cases since the first quarter of 2020.

health insurance.[5] Uttinger et al reported more than 20% lower CRC resection rates in Germany in April–June 2020 and October–December 2020, the periods of the first and second lockdown in Germany, compared to the corresponding months in 2012–2019.[6] Additionally, according to reports of the German statutory health insurance, the number of colonoscopies dropped by nearly 50% in April 2020 and cumulative numbers only saw partial recovery by the end of the year 2021.[7] The first lockdown period (April–June 2020) was also the period with the largest "shortfall" in CRC diagnoses in our analyses.

Our analyses may help to update and enhance the empirical evidence on the impact of the COVID-19 pandemic on CRC diagnoses and treatment. The sustained delay of diagnoses during the second year of the pandemic calls for major efforts to minimize such long delays[8,9] during and beyond particular challenges imposed by circumstances such as the COVID-19 pandemic.

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AUTHOR CONTRIBUTIONS

The work reported in the paper has been performed by the authors, unless clearly specified in the text. Study design: BH and HB. Statistical analysis: LW, BH, and HB. Drafting of manuscript: HB. Review and revision: all authors. Final approval: all authors.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The aggregate data used for these analyses are included in Table 1. Further information is available from the corresponding author upon request.

ETHICS STATEMENT

Data collection within the Saarland Cancer Registry has been carried out according to state legislation of cancer registration. The study was conducted in accordance with the recommendations of the Declaration of Helsinki by the World Medical Association.

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[Correction added on 10 February 2024, after first online publication: The copyright line was changed.]

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